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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/675,669

09/30/2003

Gino F. Morello

021906-025US

6763

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7590

10/27/2006

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EXAMINER

SMITH, TERRI L

ART UNIT

PAPER NUMBER

3762

DATE MAILED: 10/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/675,669

Applicant(s)

MORELLO, GINO F.

Examiner

Terri L. Smith

Art Unit

3762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 1-14,30 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10-17-05
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Group II, claims 15–29 in the reply filed on 18 October 2006 is acknowledged.
2. Claims 1–14 and 30–31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 18 October 2006.

### *Specification*

3. The disclosure is objected to because of the following informalities: On page 1 in line 12, the date listed for Application No. 60/319,358, June 26, 2003, is incorrect. According to the IFW for said Application the correct date is June 26, 2002. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the Applicant regards as his invention.

5. Claims 15–29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 15 and 24, “a time continuous signal” is inferentially included and it cannot be determined if the time continuous signal is being positively recited or functionally recited. It is also unclear what element is providing this signal and what it is related to. To positively claim the time continuous signal, it is suggested to first positively recite the time continuous signal. Otherwise, functional language such as “for” or “adapted to be” should be used.

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Claims 16 and 17 recite the limitation “the sampled time continuous signal”. There is insufficient antecedent basis for this limitation in the claims.

In claim 18, the phrase “the signal to noise ratio” is vague. It is unclear which signal is being discussed and what element provides the noise signal.

In claim 19, the phrase “the signal to noise plus distortion ratio” is vague. It is unclear which signal is being discussed and what element provides the noise plus distortion signal.

Claim 23 recites the limitation “the sampling rate”. There is insufficient antecedent basis for both occurrences of this limitation in the claim. Additionally, “a reference clock” is inferentially included and it cannot be determined if the reference clock is being positively recited or functionally recited.

Claim 28 recites the limitation “sampled data points”. There is insufficient antecedent basis for this limitation in the claim.

In claim 29, it is unclear what the “3800 data points” represent as they appear to conflict with the 200 data points of claim 28.

#### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 15–17 and 20–22 are rejected under 35 U.S.C. 102(b) as being anticipated by Antaki et al., U.S. Patent 5,888,242.

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8. Antaki et al. disclose a blood pump control system (e.g. Fig. 1, element 10) comprising a processor receiving a time continuous signal from a blood pump system (e.g. elements 21 and 20; Figs. 3–6; column 1, lines 51–54; column 4, lines 33–34); a processor being programmed to transform a time continuous signal to a frequency domain (e.g. column 6, lines 31–37), and control a blood pump and detect excess suction in response to a time continuous signal in a frequency domain (column 6, line 25 where imminent ventricular collapse is ventricular suction as described in column 2, lines 14–15 and column 4, lines 31–32); a processor is further programmed to determine parametric data based on a sampled time continuous signal in a frequency domain (e.g. column 2, lines 34–38; column 4, lines 65–column 5, lines 1–2; column 5, lines 17–25; column 6, lines 48–52).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 18, 19, and 23–29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antaki et al., U.S. Patent 5,888,242.

11. Regarding claim 24, Antaki et al. disclose a blood pump including a motor (e.g. element 14) having a rotor (e.g. column 1, lines 52–53 and 59–61); a motor controller coupled to a motor (column 1, lines 61–64; column 3, lines 9–12); a processor having inputs coupled to a motor controller for receiving a time continuous signal from a pump (e.g. elements 21 and 20; Figs. 3–6; column 1, lines 51–54; column 4, lines 33–34); a processor being programmed to

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transform a time continuous signal to the frequency domain, and control a pump and detect excess suction in response to a time continuous signal in the frequency domain (column 6, line 25 where imminent ventricular collapse is ventricular suction as described in column 2, lines 14–15 and column 4, lines 31–32). Antaki et al. do not disclose a stator and a stator including a plurality of stator windings. However, it is well known in the art for a motor to have a stator that includes a plurality of stator windings to enhance and diversify a motor's function to ensure optimal system performance in which the motor is used. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the invention of Antaki et al. to include a stator and a stator including a plurality of stator windings to enhance and diversify a motor's function to ensure optimal system performance in which the motor is used.

12. Antaki et al. disclose the essential features of the claimed invention as described above except for a processor is programmed to calculate a signal to noise ratio (claim 18), a signal to noise plus distortion ratio (claim 17) and to zero pad a received time continuous signal (claim 27) and to zero pad at least about 3800 data points (claim 29) and a motor controller applies current to stator windings in a sequence to create a rotating field, and a time continuous signal includes a stator winding current (claim 25) and a received time continuous signal from a blood pump comprises less than about 200 sampled data points of a time continuous signal (claim 28).

However, it is well known in the art to program a processor to calculate a signal to noise ratio and a signal to noise plus distortion ratio to enhance signal demodulation and message recovery or to indicate viable recovered message fidelity. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the invention of

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Antaki et al. to include programming a processor to calculate a signal to noise ratio and a signal to noise plus distortion ratio to enhance signal demodulation and message recovery or to indicate viable recovered message fidelity. Further, it is well known in the art to program a processor to zero pad a received time continuous signal to advantageously extend a signal or spectrum to extend its time or frequency limits for enhancing signal resolution. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the invention of Antaki et al. to include programming a processor to zero pad a received time continuous signal to advantageously extend a signal or spectrum to extend its time or frequency limits for enhancing signal resolution. Also, it is well known in the art that a motor controller applies current to stator windings in a sequence to create a rotating field, and a time continuous signal includes a stator winding current because this is the basic function of a motor that enable it to perform efficiently in a system and allow the system in which it is used to operate effectively. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the invention of Antaki et al. to include a motor controller applies current to stator windings in a sequence to create a rotating field, and a time continuous signal includes a stator winding current because this is the basic function of a motor that enable it to perform efficiently in a system and allow the system in which it is used to operate effectively. Additionally, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a received time continuous signal from a blood pump comprises less than about 200 sampled data points of a time continuous signal and a processor is programmed to zero pad at least about 3800 data points, since it has been held that

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discovering an optimum value of a result effective variable involves only routine skill in the art.

*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). (See MPEP 2144.05).

13. Antaki et al. disclose the essential features of the claimed invention as described above except for an analog to digital converter (ADC) that converts a time continuous signal to a digital signal; and a sample mode selector connected to an analog to digital converter, a sample mode selector setting one of a synchronous sample mode or an asynchronous sample mode, wherein if an asynchronous sample mode is set, a sampling rate of an analog to digital converter is set by a reference clock; and if a synchronous sample mode is set, a sampling rate of an analog to digital converter is set according to a frequency of a time continuous signal (claim 23). However, one of ordinary skill in the art would have known to convert a time continuous signal to a digital signal using an ADC and a sample mode selector connected to an analog to digital converter to set one of a synchronous sample mode or an asynchronous sample mode, wherein if an asynchronous sample mode is set, a sampling rate of an analog to digital converter is set by a reference clock; and if a synchronous sample mode is set, a sampling rate of an analog to digital converter is set according to a frequency of a time continuous signal to ensure most advantageous operation of a blood pump for rendering optimum function of a heart. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the invention of Antaki et al. to include converting a time continuous signal to a digital signal using an ADC and connecting a sample mode selector to an analog to digital converter to set one of a synchronous sample mode or an asynchronous sample mode, wherein if an asynchronous sample mode is set, a sampling rate of an analog to digital converter is set by a reference clock; and if a synchronous sample mode is set, a sampling rate of an analog to digital



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converter is set according to a frequency of a time continuous signal to ensure most advantageous operation of a blood pump for rendering optimum function of a heart.

*Conclusion*

14. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Terri L. Smith whose telephone number is 571-272-7146. The Examiner can normally be reached on Monday - Friday, between 7:30 a.m. - 4:00 p.m..

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Angela Sykes can be reached on 571-272-4955. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
TLS

October 26, 2006

26 October 2006

  
GEORGE R. EVANISKO  
PRIMARY EXAMINER

10/26/6